# CropPest Ontario

Agriculture Development Branch
Editor—Albert Tenuta– Field Crop Pathologist
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**Comments, suggestions or articles are welcome. To be added to the distribution list please contact:**

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**albert.tenuta@ontario.ca or mirjam.hall@ontario.ca**

## Western Bean Cutworm, Spider Mites And Soybean Aphids

### Tom Cowan, Entomologist, OMAFRA, Ridgetown

Our WBC trapping network has been catching relatively few moths over the past weeks but last week some higher numbers were reported. These numbers are still a bit behind what I would have expected considering the warmer weather but the trend is towards increasing numbers. Just last week the scouts were finding quite a few WBC egg masses on corn in the Bothwell area with some of the eggs beginning to hatch. Increasing trap catches have been found in **Chatham-Kent, Elgin, Halimand-Norfolk, Huron, Lambton, Oxford and Wellington**. We haven't seen peak moth flight yet but we are certainly on the way. A lot of corn in south western Ontario, is in the whorl-to-pretassel and tassel stage and with moth eggs being found, it's time to get out and start scouting.

WBC egg mass with newly hatched larvae.

PIONEER A DuPont Company
Hyland Seeds BUILDING
NK syngenta
Bayer CropScience
FS
MONSANTO imagine
BASF The Chemical Company

# Western Bean Cutworm, Spider Mites and Soybean Aphids ..... continued

For a refresher on scouting techniques and threshold numbers check out the link to the agronomy guide: http://www.omafra.gov.on.ca/english/crops/pub811/13corn.htm#wbcutworm

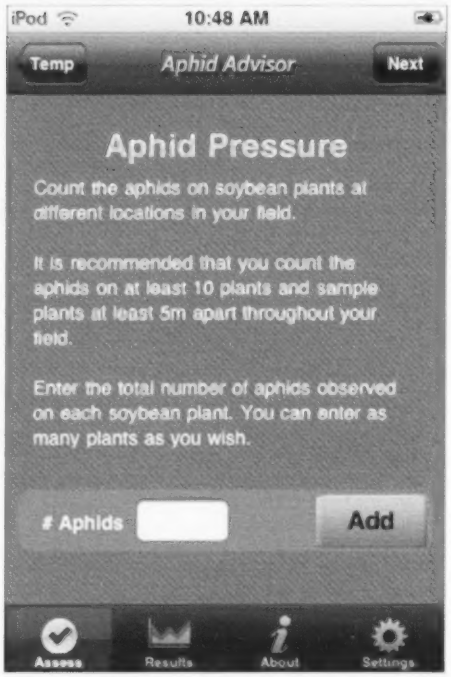
For weekly updates on trap catches in your area visit the Canadian Corn Pest Coalition website www.compest.ca

**Hot + Dry = Spider Mites**

In areas where we have seen very little rain and high temperatures some reports of spider mites in soybeans are coming in. It looks like now is the time to start scouting! Typically damage is first noticed at the field edges however, the wind can move the mites further into the field where hot spots can develop. When scouting, look for stippling, curling and bronzing of the leaves. These are symptoms of mite damage. Scouting information, identification and thresholds are available in the agronomy guide: http://www.omafra.gov.on.ca/english/crops/pub811/13soybean.htm#spider

**Any Aphids Yet?**

Some reports of soybean aphids have been coming in but the numbers are low so far. Our neighbors to the south are also reporting low numbers of soybean aphids this year so I have my fingers crossed for things to stay that way. This is the time of year when populations can start to build so keep an eye out for them.


iPod
10:48 AM
Temp
Aphid Advisor
Next
Aphid Pressure
Count the aphids on soybean plants at different locations in your field.
It is recommended that you count the aphids on at least 10 plants and sample plants at least 5m apart throughout your field.
Enter the total number of aphids observed on each soybean plant. You can enter as many plants as you wish.
# Aphids
Add
Assess
Results
About
Settings

This may be a good year to try the Aphid Advisor App. This smart phone app is available for Black Berry, iPhone and Android operating systems and is a useful tool to help decide if an insecticide application is needed.

The app is available through the website www.aphidapp.com for blackberry users and will soon be available through the App Store for iPhone users. Check out the website for more information.

**OMAFRA Field Crop Staff Working for You!**

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# Have Weeds You Can't Identify? Send Them to Us!

**Mike Cowbrough, Weed Management Program Lead, OMAFRA, Guelph**

**WANTED: weed specimens from around the province that are found in fields or that border those fields and especially weeds that you can't identify, but want to know what they are!**

What if while you were taking soil cores for nutrient testing in the fall you could also get an analysis of annual and perennial weeds found in that field? What if you could probe hay bales or silage to determine whether a poisonous plant or noxious weed existed? These are the type of diagnostic tools that could be developed but first we need to collect weed specimens, have them identified and map their DNA.

Dr. Steven Newmaster (University of Guelph) is looking for weed specimens **from Ontario** for his DNA barcoding project. He will identify them for free, but you have to send them to him. Below are instructions on how to do it.

1. The plant samples should arrive at the herbarium no later than **3 weeks** after they are collected.

2. Samples should be placed in **NEWSPAPER** and placed under some kind of weight until mailed. If the specimen is thick or succulent use more newspaper. The idea is to flatten and dry the specimen as quickly as possible. Specimens placed in plastic go to mush very quickly and even with my extensive identification skills, I will not be able to identify the mush.

**Information about the sample should include**

1. **Location:** Latitude and Longitude **OR** County, Township, Lot and Concession **OR** Global Positioning Co-ordinates **OR** description of the location eg. 500 meters east of the junction of Hwy. 58 and Stanley St. in Ayr, Ontario.

2. **Habitat:** For example, found on the edge of a corn field or found in a ditch beside a tobacco field or found along a stream bank or found along the highway shoulder. And you can describe the type of soil or drainage if you know it. Eg. Low depression in a corn field which floods when it rains.

3. A couple of **digital pictures** would be ideal, a close-up (flower or fruit or some notable characters) and a long shot (whole plant). E-mail the photos to: botcal@uoguelph.ca and mike.cowbrough@ontario.ca

4. **Remarks:** These are optional. You can put sample found with about 100 other plants of the same kind or single plant found with other weeds or flower colour a bright orange.

5. **Date:** The date you collected the sample.

6. **Collector Name:** The person who collected the sample. May be more than one person. Include your contact information so that you can receive a notification of what the species you submitted is.

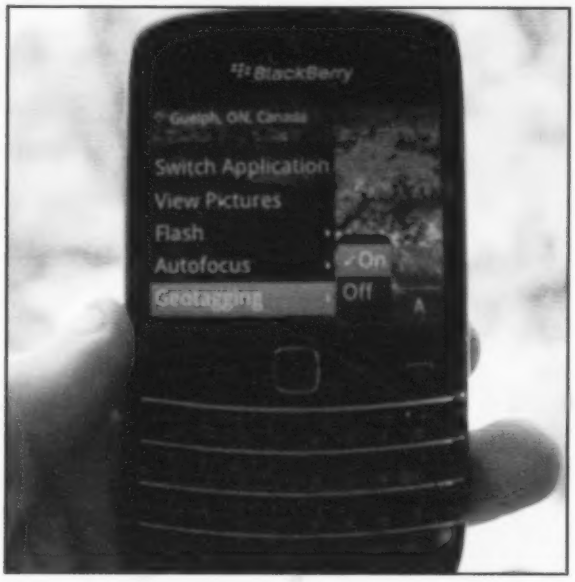
**Where to Mail the Samples**

Put the flattened newspaper between cardboard even if the sample is not dry & mail it to:

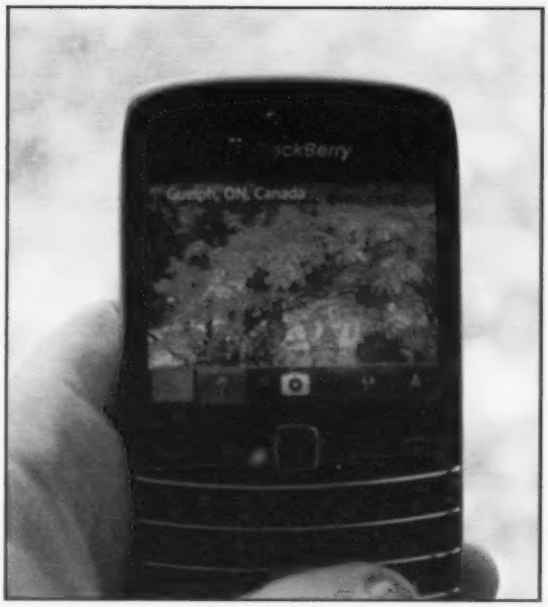
**Carole Ann Lacroix**
**Science Complex**
**University of Guelph**
**GUELPH, ON**
**N1G 2W1**

**Tips**

Your smartphone can provide the information needed in step 1 and 3. You can use your camera to take a photo of the weed and e-mail it. You need to ensure that you have enabled the "geotagging" function on your smartphone prior to taking the photo.




Above: before taking a picture with your smartphone, make sure the "geotag" option is on.




When taking a picture with the geotag (GPS) option on, you will notice that your location is usually displayed. This, of course, may vary by type of device.

# Fungicide Efficacy for Control of Corn Diseases

## Albert Tenuta, Field Crop Pathologist

The hot, dry weather conditions to date have not been very conducive to foliar leaf diseases across most of the province. In most cases, besides high relative humidity, prolonged wet conditions on the leaves are necessary for infection but only under favourable temperatures (16-30°C). What has started to show recently in the southwest are the first common rust pustules but at very low levels. Common rust in corn does not overwinter in the province and spores are carried into the area on storm fronts or wind currents from the U.S.

The Corn Disease Working Group (CDWG) has developed the following information on fungicide efficacy for control of major corn diseases in the United States and Ontario. Efficacy ratings for each fungicide listed in the table were determined by field testing the materials over multiple years and locations by the members of the committee. Efficacy ratings are based upon level of disease control achieved by product, and are not necessarily reflective of yield increases obtained from product application. Efficacy depends upon proper application timing, rate, and application method to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table. Table includes the most widely marketed products available, but is not intended to be a list of all labeled products.

| Fungicide(s) | | | Anthrac-nose leaf blight | Common rust | Eye-spot | Gray leaf spot | Northern leaf blight | South-ern rust | Diplodia ear rot | Fusarium ear rot | Gibberella ear rot |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Class | Active ingredient (%) | Product/ Trade name | | | | | | | | | |
| Strobilurin Group 11 | Azoxystrobin | Quadris | VG | E | VG-E | E[1] | G | G | NL | NL | NL |
| | Pyraclostrobin | Headline EC | --[2] | E | E | E | VG | E | NL | NL | NL |
| Triazole Group 3 | Propiconazole | Tilt 250 E Bumper 418 EC | --[2] | VG | E | G | G | G | NL | NL | NL |
| | Prothioconazole | Proline 480 SC | --[2] | VG | E | VG | VG | --[2] | NL | SUP | SUP |
| Mixed mode of action | Azoxystrobin Propiconazole | Quilt | G | VG-E | E | E | VG | VG | NL | NL | NL |

[1]Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; SUP=Suppression Only; NL = Not Labeled for use against this disease
[2]Insufficient data to make statement about efficacy of this product
[3]Multiple generic products containing tebuconazole may also be labeled.

Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Please read and follow all specific use restrictions prior to fungicide use.

This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. Reference to products in this publication is not intendedto be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturer. Members or participants in

# Impact of Dry Conditions on Soybeans

**Horst Bohner, Soybean Specialist, OMAFRA, Stratford**
**Albert Tenuta, Field Crop Plant Pathologist, OMAFRA, Ridgetown**

Prolonged dry conditions can reduce soybean yield at any stage of development, but plants are more susceptible during germination and the reproductive growth stages. Dry soil conditions during germination will reduce plant stands. Severe moisture stress is evident by leaf wilting and under extreme conditions may lead to plant death. A lack of moisture during the vegetative growth stages (May and June) is usually not yield reducing if enough moisture was present for emergence. The crop is the most susceptible during the reproductive stages of growth as is corn. Moisture stress during the reproductive stages will lead to fewer, smaller, and poor quality seeds. Once the plant starts to flower it needs significant water right through to seed fill. In Ontario the growing conditions during the second half of July and August are critical to soybean yield.

Soybean yield is a function of the number of plants/acre, pods/plant, seeds/pod, and the size of the seed. Each of these yield components is fixed in the above order during specific timeframes of plant development. Moisture stress confined to a specific growth stage reduces the yield component that is established during that phase. On the other hand, water abundance during a specific phase enhances a specific component. Stress early during the reproductive stages reduces seed number. However, if moisture returns that reduction is offset by enhanced individual seed size or mass. Stress later during the reproductive phases greatly depresses seed mass, the last yield component to be fixed during reproduction ( Table #1).

**Table #1. Yield, Number, and Individual Mass Response to Moisture Stress**

| Water Stress Timing | Yield (g pot $^{-1}$) | Seed Number (no. pot $^{-1}$) | Individual Seed Mass (mg seed $^{-1}$) |
|---|---|---|---|
| **Control** | 29.3 a | 240 a | 120 b |
| **R1-R5** | 24.1 b | 129 c | 190 a |
| **R5-R7** | 16.9 c | 196 b | 90 c |

Means followed by different letters are significantly different, LSD (P = 0.05). Reaper and Purcell, 1999.

Soybean varieties grown in Ontario have an indeterminate growth habit. The indeterminate cultivars flower from the base of the plant upward as the plant grows vegetatively as compared to determinate cultivars which flower after vegetative growth stops. Therefore, soybean varieties adapted for Ontario have an overlapping vegetative and reproductive growth periods. The result is that indeterminate varieties have an extended flowering period (end of June into early August).

This extended flowering period gives us added built-in protection or insurance against stressed conditions. Yield that may be lost due to flower abortion early in the reproductive stages can be compensated for by flowers and pods that will be produced later in the season. If plants go through the entire flowering period with insufficient moisture significant yield losses will occur. Even if water is supplied past flowering yield losses cannot be regained.

### Stress Induced Symptoms

Inadequate water reduces nutrient availability, nutrient uptake and movement within the plant. One of the most evident water stressed nutrient deficiencies is potassium as is flipped leaves exposing the underside of the leaf. Another serious consequence of moisture stress is the reduction of biological nitrogen fixation. Plants that lack water will shut down nitrogen fixation in the root nodules. Plants weakened by stress are also more susceptible to disease and insects. Insect feeders like soybean aphids do considerably more harm in a dry year than in a wet year.

## Impact of Dry Conditions on Soybeans ..... continued

There are no management strategies to alleviate moisture stress once it occurs. The following practices have been shown to lighten the impact of moisture stress:

1. Planting deep enough for adequate germination moisture
2. Early planting for greater root depth and density
3. Establishing a full canopy early in the season through narrow rows
4. Good weed control to reduce competition
5. Good crop rotation and fertility program
6. Careful management of disease and insects.

**What About Fungicides?**

Although there is scientific data showing fungicide applications can reduce stress caused by diseases there are no conclusive scientific publications or consistent results showing a fungicide application will reduce environmental stresses caused by dry conditions, hail, etc in the absence of disease. What will determine yield in this case is the variety/hybrid (genetics) grown, weather conditions, crop nutrition and soil structure

## Impact of Dry Conditions on Corn

### Greg Stewart, Corn Specialist, OMAFRA, Guelph

The impact of dry weather on potential corn yield hinges on two factors: 1) the severity of the moisture stress (dry conditions) in the corn plant, and 2) the developmental stage which the crop reaches before stress is relieved with rainfall. Dry weather early in the season (May to mid-June) can often be beneficial to the corn crop in Ontario as it allows for early planting and root development that is not restricted by elevated water tables.

Consider a crop to be under severe stress if leaves are rolled throughout the entire daytime period. Seven days of this type of stress which terminates prior to tassel emergence will result in yield losses of five to 15 per cent.

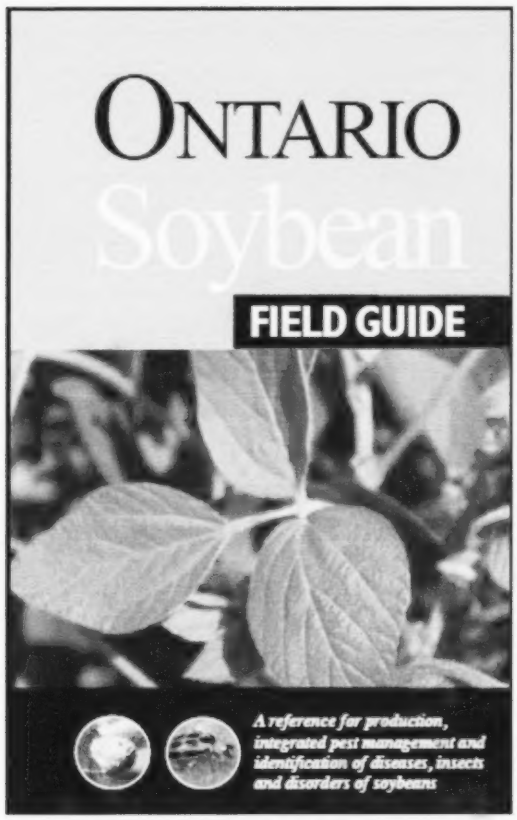
If the crop remains under stress through the phase where the tassel emerges and the ear shoot growth expands in preparation for silk emergence, yield reductions may reach the 20 to 45 per cent range. The most critical stage for moisture stress is the next phase, where the silks emerge from the ear and pollen is shed from the tassel. Failure to relieve moisture stress during this window can cause yield reductions of up to 75 per cent or more.

Plants that continue to have soil moisture reserves and are wilting only for portions of the day may experience much less severe yield reductions.

The synchronization between pollen shed and receptive silks may be disrupted by dry weather and is the basis for at least part of the yield reduction. Silks that continue to grow from the ear shoot and appear abnormally long may be an indication that pollination has not occurred successfully.

Detecting successful pollination without waiting for blisters to appear on the ear can be done by carefully removing the husks, turning the ear upside down and shaking it. Silks will only remain attached to those parts of the ear which have not been pollinated.

Relief of severe moisture stress after the crop has passed through the pollination phase cannot increase the number of kernels that have formed on the ear, but may increase the size and density of kernels and aid in improving yields.


ONTARIO
Soybean
FIELD GUIDE
A reference for production, integrated pest management and identification of diseases, insects and disorders of soybeans

This publication is the result of a cooperative effort between the Iowa Soybean Association and the College of Agriculture and Life Sciences and Extension at Iowa State University in conjunction with the Ontario Ministry of Agriculture, Food and Rural Affairs, University of Guelph Ridgetown Campus and the Grain Farmers of Ontario with funding for the SMART Soybean project (Strategic Management Adding Revenue Today) through Agriculture and Agri-Food Canada's CanAdvance Program which is administered by the Agricultural Adaptation Council in Guelph.

This 77-page pocket-sized guide (3 ¾" x 6") was prepared for soybean producers and soybean agronomists to assist in the identification of soybean diseases, insects, nutrient problems, herbicide injury, etc for Ontario.

Colour photos and basic information on soybean management issues are presented in a durable, weather-safe format.

**If you would like a copy of the brochure please call the Ridgetown OMAFRA Resource Centre 519-674-1690.**

SOYBEAN FIELD GUIDE
A reference for production, integrated pest management and identification of diseases, insects and disorders of soybeans
Ontario
Agricultural Adaptation Council
UNIVERSITY of GUELPH
IOWA STATE UNIVERSITY
Extension and Outreach
Iowa Soybean ASSOCIATION
OMAFRA
Ontario Ministry of Agriculture, Food and Rural Affairs
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